

Quality Assurance Plan

DRAFT

CalWIN



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CalWIN Project

Quality Assurance Plan

Introduction

Purpose and Scope

The purpose of this document is to describe the Quality Assurance (QA) approach to be applied during execution of CalWIN and the roles and responsibilities of CalWIN Management and CalWIN Project Team members in successfully implementing this plan. This plan describes the methods used to assure the quality of the work products produced and the services performed.

Quality in the context of this QA Plan is defined by the end products and is implemented through the processes and actions of project personnel. The benefit of building quality into processes is to assure product quality, and the benefit of avoiding product errors late in the development life cycle. This plan describes the checks and balances that help ensure cost-effective, quality products are produced.

Audience

This plan is intended for use and application by the CalWIN Project Team, comprised of:

- EDS CalWIN Team
- WCDS CalWIN Team

Approach

Assurance of quality can only be achieved by aligning the *Voice of the Process* (VOP) with the *Voice of the Counties* (VOC.) The VOC is a term used in reference to all aspects of what the Counties are seeking in CalWIN's products and services¹. This includes all defined requirements and all the County expectations. The VOP is a term used to refer to the demonstrated capability of the processes used to create the products and services. The Software Engineering Institute Capability Maturity Model (SEI/CMM) is built upon the premise that the processes used to create products and services define their quality. The VOP, as the term is used here, refers to all aspects of the system used to create the CalWIN products and services.

Understanding and clearly defining the VOC and the VOP are fundamental requirements for assuring quality. From this understanding, the need for corrections can be identified and reduced to achieve the goals of CalWIN. The need for correction is defined as the gaps between the VOC and the VOP. This plan describes the processes that are used to understand and define the VOC and the VOP, and to prevent and reduce the need for correction.

¹ *Voice of the Counties* (VOC) and *Voice of the Process* (VOP) are derived from the terms Voice of the Customer and Voice of the Product which are terms that are attributable to the Quality Function Deployment (QFD) technique.

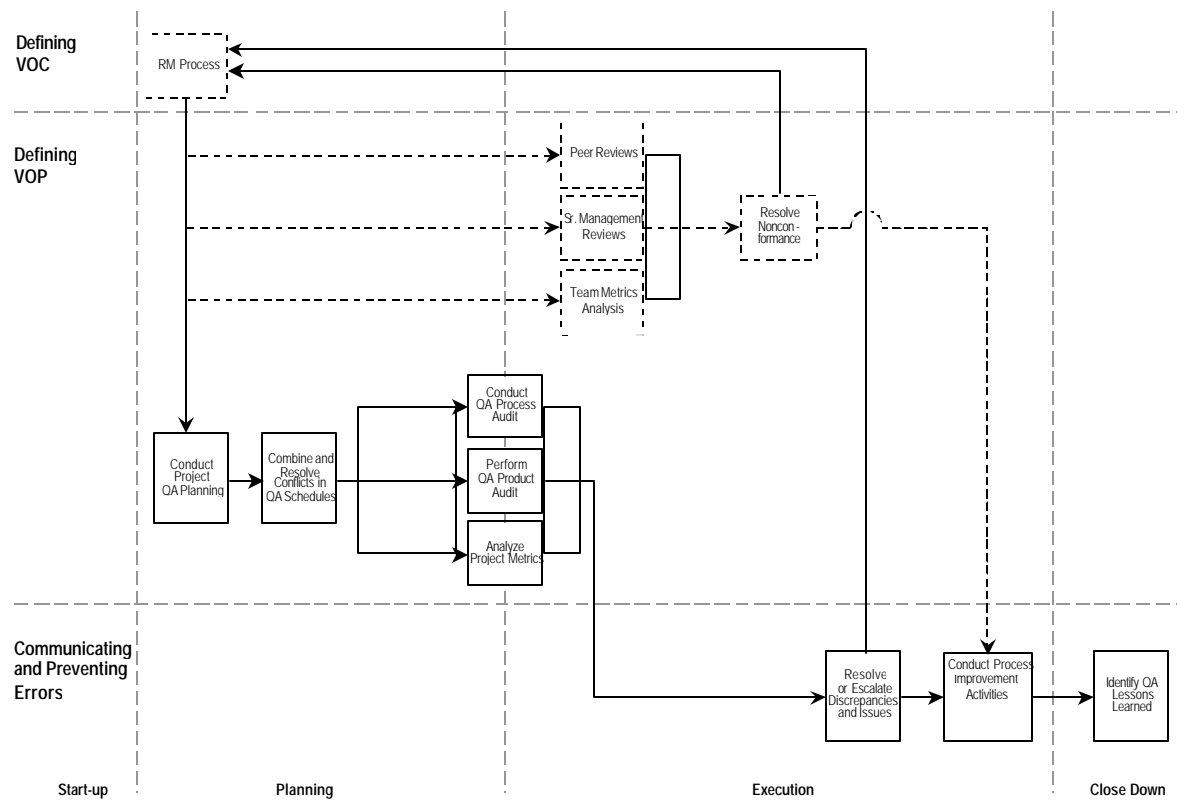
Process for Assuring Quality

The process for assuring quality defines the primary tasks that are performed to ensure the products and services are of the highest quality. The process involves the following three primary tasks:

- Defining the VOC
- Defining the VOP
- Preventing and documenting corrections

The responsibility for ensuring this process is accomplished rests with the CalWIN Project Manager. The process is depicted in Exhibit 1.

Exhibit 1 – Process for Assuring Quality



The tasks depicted with a dotted line are the CalWIN Team's responsibility and those depicted with solid line blocks are the responsibility of the QA Team.

The QA Team assists the CalWIN Project Manager by providing objective visibility into the products and the processes used to create these products so that the need for corrections can be discovered and corrected early and efficiently. The QA Team is primarily responsible for performing independent product reviews, process reviews, and trend identification based on metrics analysis; and reporting this information to the CalWIN Management Team.

The QA Team's responsibilities and activities do not lessen the project team's responsibility to perform peer reviews of products and processes; rather QA provides objective visibility into the effectiveness of the team's peer review and peer review processes.

Defining the Voice of the Counties

The primary means for defining the VOC is through Requirements Management. The requirements for each product or service must be verified with the Counties continuously during the product development or service definition. This constant interaction is the cornerstone of truly understanding and defining the VOC. The CalWIN Project Manager has the responsibility for defining the VOC and is assisted in this task by the CalWIN Team members.

Visibility into the VOC activities is provided by QA reviews of the project Requirements Management Process.

Defining the Voice of the Process

Visibility into the VOP is provided through reviews, and analysis of the project processes and products. This visibility is obtained through the following five primary activities:

- Peer reviews
- Senior management reviews
- Product reviews
- Process reviews
- Metrics analysis

These activities provide the means to assess the products, services, and processes on the project to identify where improvements are necessary. During these assessments, the products, services, and processes are analyzed against the VOC and also analyzed to identify other areas where improvements can be made. The QA Team has the responsibility for independent metrics trend analysis, product reviews, and process reviews. Peer reviews and senior management reviews are the responsibility of the project team. These activities are further defined in the following segments.

Reviews

Reviews are conducted by the project team and are a means of identifying and correcting deficiencies early and efficiently. Additionally reviews provide a means to both communicate product and project issues and to use the collective intelligence of the review team to improve the products.

Peer Reviews

The purpose of peer reviews is to make corrections to work products early and efficiently. Important benefits resulting from peer reviews are the development of a better understanding of the work products, the prevention of corrections, and increased inter-group coordination. Peer reviews are primarily the responsibility of the project team based on the life cycle defined for the project.

Senior Management Reviews

Senior management reviews are conducted for the following reasons:

- To provide the project team with the broader perspective afforded by senior leadership.
- To ensure that Senior Management is fully informed of all pertinent issues regarding the products and processes.

Senior management performs periodic project reviews. The reviewing manager defines the specific format and areas of concentration for the review when the review is scheduled.

Reviews

Reviews are conducted by the QA Team and provide the objective visibility into the processes performed and products produced within the project.

Product Reviews

The QA Team reviews designated products (software, hardware, or documentation) to verify compliance with the applicable standards and requirements. The specific deliverable products that will be reviewed and the schedule for these reviews will be part of the QA Master Schedule.

Configuration reviews are a specific type of product review that is not performed by the QA Team, but rather is performed by the Configuration Management (CM) Team. The QA Team assists in performing the configuration reviews by validating the review materials and supporting the CM Team in performance of these reviews.

Process Reviews

The QA Team participates in the preparation of the project plans, processes, and procedures to verify compliance with organizational policy, appropriate standards, and requirements. Once these processes are implemented, the activities performed in executing CalWIN are reviewed by the QA team to verify compliance with the defined plans, processes, procedures, policy, and the appropriate standards. Deficiencies identified are documented and tracked to closure.

The tailored version of the EDS Project Healthcheck: the CalWIN Organization Healthcheck (See Appendix A), is used by the QA Team to organize process reviews, and report the high-level results of the process compliance for CalWIN. The Organization Healthcheck is organized into areas and each of these areas is reviewed with the criteria that are defined within that area periodically, as defined in the QA Schedule. The review criteria defined within the Organization Healthcheck is separated into levels of compliance for each area as follows:

- A Compliance to Project Management “Best Practices”
- B Compliance to the Software Capability Maturity Model (SW-CMM)

The criteria for levels A and B are defined directly in the Organization Healthcheck. The areas that are conducted within the Organization Healthcheck and the level to which each area is reviewed is tailorable dependent upon the needs of the project but is planned and documented in the Master QA Schedule.

For Organizational Healthcheck Level A, a QA Review Notice will be sent at the beginning of the month in which the reviews are to occur. The CalWIN Managers will designate a project individual as the Project’s Organizational Healthcheck Level A Reviewer, for each Organizational Healthcheck review to be performed and indicate the dates on which the review is to be conducted to include objective evidence reviews and interviews, as appropriate. The Project’s Organizational Healthcheck Level A Reviewer will complete their respective checklists electronically and include comments with objective evidence references indicating document page and paragraph references. Completed checklists will be sent via email to the QA Team on the date specified by the CalWIN Managers. The QA Team will consolidate all of the review input for the project for the month and present review results, including noncompliances found, to the CalWIN Managers. Based on the approved QA Process, the CalWIN Managers have five working days to resolve each noncompliance, or develop a plan to resolve each noncompliance, and report back to the QA Team with disposition. Each noncompliance that is still open at that time will be escalated to the next level of management.

For Organizational Health Check Level B, each Subject Matter Expert is responsible to review and update their respective gap analyses monthly for the month prior, before the 5th working day of each month. The QA Team will compile this information from those updated gap analyses.

Metrics Analysis

The QA Team, as defined in the Quality Assurance Process, analyzes the project metrics collected in accordance with the Metrics plan for trends. The results of this analysis are used to help define specific areas of interest during the product reviews and process reviews. Additionally the metrics analysis results are used to define potential areas for improvement.

Reporting

A report of each review conducted is forwarded to the CalWIN Managers. In addition, the activity and results of the QA involvement in the peer reviews, the product reviews, process reviews, and metrics trend analysis are reported monthly by the QA Team to the CalWIN Managers. This reporting is accomplished via the project Review and Review Summary Report. The QA Team consolidates this information, highlights issues that need to be elevated, and forwards them to the CalWIN Project Manager.

Issues Elevation and Resolution

Discrepancies and issues that are identified in products and processes are resolved or escalated according to the “Resolve or Escalate Discrepancies and Issues” activity that is contained within the QA Process.

Preventing and Reducing Corrections

There are three primary activities associated with preventing and reducing corrections—education and training, lessons learned and continuous improvement. These activities are described in the following segments.

Education and Training

Education and training are fundamental to the successful assurance of quality for the project and are the most proactive and efficient way of preventing the need for corrections on the project. Each member of the CalWIN Team must have a familiarity with the methodologies, standards, plans, processes, and procedures their project is using to accomplish the objectives. The core areas related to QA that each team member must be familiar with include the following:

- SW-CMM
- CalWIN Methodologies and use of the Technology Policy [Frame Work and EDS Project Management Methodology (PM2)]
- CalWIN Orientation (Including at a minimum the QA Plan [this document] and Process and the Requirements Management Process)

Training is provided to each team member, as required, to ensure they have a familiarity with these knowledge areas and that a consistent base of knowledge exists across the CalWIN Team. The procedures to identify, monitor, and accomplish this education and training is defined within the CalWIN Training Process and Plan.

Lessons Learned

Lessons Learned are defined as successes, problems, and opportunities for improvement. These Lessons Learned are documented, discussed, resolved, and revisited throughout the project. QA Lessons Learned are documented as they occur and forwarded to the QA Team. They are tracked in the QA Tracker database. QA Lessons Learned are addressed during status meetings and resolved or a plan for resolution is identified.

Continuous Improvement

The QA reports for each project are consolidated by the QA Team and reviewed by the CalWIN Managers and CalWIN Track Leads. The purpose of these reviews is to identify areas requiring improvement and to either identify items that should be assigned to specific individuals or teams for those items that can be worked at the project level. Project-level issues are documented and assigned to an individual for monitoring and tracking until the issue is closed. The QA Team assists the CalWIN Managers in defining, tracking, and performing improvement activities.

Management Support Structure

This segment identifies the organizational structure and the roles and responsibilities of both the project team members and the QA Team members integral to the successful completion of this plan. The key feature provided through the defined organizational structure is the independence of the QA group from the project team. The reporting channel for the QA group is independent of the Project Manager, the project's engineering group, and other project-related groups.

Organizational Structure

This segment describes the organization and lines of communication and coordination that are necessary to execute this plan.

The Vice President for Americas Delivery Information Solutions has assigned responsibility and authority for CalWIN to the EDS CalWIN Project Manager. The WCDS Directors Conference has assigned responsibility and authority for CalWIN to the WCDS CalWIN Project Manager

The CalWIN Project Managers have assigned responsibility of the QA function and the authority to the QA Manager, in order to ensure that the QA function is performed independently of project management for all of the projects. The individuals performing the QA function for CalWIN are identified as the QA Team. This independent QA Team provides quality oversight for projects and processes and to monitor the quality of products and services delivered. The QA Team representative for each project reports to the QA Manager, independent of the CalWIN Manager for that particular project.

Roles and Responsibilities

This segment details the roles and responsibilities associated with QA policies and goals.

CalWIN Project Managers

- Conduct senior management reviews.

CalWIN Managers

The CalWIN Managers have the primary responsibility for assuring quality on their project(s). Specific responsibilities relating to assuring quality are as follows:

- Ensure development of a project QA Plan including a schedule for the project and identification of specific resources to accomplish that plan.
- Support the QA plan.
- Allocate resources to perform QA activities.
- Support quality initiatives by initiating and sustaining improvement activities and briefing the Counties on the status of QA activities.
- Inform the QA Team of current and future changes made to standards or procedures.
- Ensure that all review questionnaires are answered and returned to QA personnel.
- Participate in reviews and reviews.
- Work with the QA Team to resolve all quality issues in a timely manner.
- Identify issues of noncompliance with standards or procedures.
- Review circumstances surrounding noncompliance.
- Determine a strategy for resolution of noncompliance.

- Approve the use of and provide metric data.
- Designate an individual as the Organizational Healthcheck Level A Reviewer.

CalWIN Track Leads

Track Leads are responsible for the implementation and execution of QA processes and procedures within their particular task areas. Specific responsibilities relating to QA are as follows:

- Implement all processes and procedures for the team to ensure a high-quality end product.
- Plan actions required for peer reviews associated with their product deliverable(s).
- Receive and act upon all reviews and review reports.
- Ensure that all issues are resolved in a timely manner.
- Ensure that all team members are aware of the processes and perform their tasks accordingly.

CalWIN Analysts, Consultants, Coordinators, Programmers, Specialists

The individual team members who perform work on the deliverable product(s) have the key role in effectively implementing QA to produce high-quality work products. Specific responsibilities of the project team are as follows:

- Understand, follow, and implement the project QA Plan, the QA Process, and the relevant specifications and standards for the product deliverable(s).
- Lead and/or participate in team reviews.
- Participate in issue resolution and propose solutions.
- Support QA activities.
- Identify and report any inability to perform a procedure or meet quality expectations to the CalWIN Track Leads and the QA Team.
- Participate in QA reviews.
- Provide QA personnel information needed to conduct an review.
- Implement prescribed solutions for noncompliance issues.
- Provide metric data.
- Assist in establishing and updating processes and procedures.

QA Team Members

QA Specialists are the project representatives who perform the following functions:

- Conduct project QA planning.
- Plan and conduct QA reviews as follows:
 1. Use the Organizational Healthcheck at least quarterly.
 2. Develop review checklists for project-level processes, plans, standards, procedures, and products.
 3. Review project processes, plans, standards, procedures, and products
- Collect QA metrics.
- Perform metrics trend analysis.
- Prepare QA reports, as required.
- Escalate issues to the appropriate level of management for resolution.
- Address noncompliance issues with the project team first and resolves them there, if possible.
- Track project noncompliance and issues to resolution.
- Document project QA lessons learned.
- Track and report QA activities, results, and metrics to the QA Manager.

- Report results of QA review to the CalWIN Manager(s).
- Brief CalWIN Project Manager on results of QA review.
- Participate in and report on life-cycle reviews.
- Assure adherence to the standards and procedures outlined in the QA Plan.
- Update the QA Team on QA tasks and activities.
- Participate in the preparation and review of project plans to ensure that quality-related activities are incorporated.
- Develop, implement, and update the project QA Plan.
- Educate project team members on QA functions.

Resources

QA Team resources and tools are described below. Each QA Team member needs the following tools:

- A personal computer
- Word processing, spreadsheet and project management software for work products such as guidelines, procedures, review criteria, questionnaires, reports, forms, agendas, meeting minutes.
- Presentation development software for training materials and supporting materials for reports
- Electronic mail for communications with the Counties and geographically dispersed teaming partners.
- Web and public Internet access software to access outside the firewall to the SEI Homepage to maintain currency with QA activities
- A process documentation tool (i.e., Process Sourcerer) to store and maintain processes and work product templates

Appendix A – CalWIN Organization Healthcheck Guidance

The following chart provides guidance on what process reviews and what level of process reviews to conduct each month. The entire Organization Healthcheck is conducted at all levels at least annually.

Period:		Jan, Mar(PAO), May, Jul(PAO), Sep, Nov(PAO)				Feb, Apr, Jun, Aug, Oct, Dec		
A	Project Health Check Areas:	Communications Management	Scope Management	Risk Management	Schedule Management	Quality Management	Financial and Contract Management	Resource Management
B	CMM Key Process Areas:	Requirements Management, Project Planning, Project Tracking and Oversight, Subcontract Management, Quality Assurance, Configuration Management				Organization Process Focus, Organization Process Definition, Training, Intergroup Coordination, Integrated Software Management, Peer Reviews, Software Product Engineering		

Appendix B - Abbreviations

CMM	Capability Maturity Model
MEC	Metrics and Estimating Center
OPI	Opportunity for Process Improvement
PAO	Process Assurance Organization
PFG	Process Focus Group
PFSC	Process Focus Steering Committee
PM2	Project Management 2
QA	Quality Assurance
SEI	Software Engineering Institute
SEPG	Software Engineering Process Group
SEPN	Software Engineering Process Network
SLC3	Systems Life Cycle 3
SW-CMM	Software Capability Maturity Model
VOC	Voice of the Counties
VOP	Voice of the Process

Appendix C - References

EDS, *EDS iQ Focus on the Customer Guide*. January 1994.

EDS, Software Engineering Process Network. *Software Quality Assurance Criteria Development Process*. 30 June 1994.

EDS, *Peer Review Process*. 24 March 1999.

Software Engineering Institute, *Capability Maturity Model for Software*, Version 1.1. February 1993.